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## Trump Economics and China-US trade imbalances<sup>1</sup>

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### Abstract

With data on overall trade flows and the value-added contents of trade across countries, in this paper we provide empirical evidences to show: 1) the East Asian economies are traditionally the major source of US's trade deficits and provider of labor-intensive manufacturing, consumer goods to the US due to the differences in comparative advantages between US and East Asian economies; 2) The relocation of labor-intensive manufacturing from other East Asian economies to China in a flying-geese pattern due to changing comparative advantages and the global production sharing contribute to the meteoric rise of China-US trade imbalances in the last three decades; 3) Even though the weight of China's contribution to US's trade deficit increased sharply after the 1990s, the contribution of East Asian economies as a group to US trade deficit in fact declined in the same period. Therefore, China and East Asian economies cannot be the main cause for the worsening of US trade imbalances after the 1970s; and 4) the China-US trade imbalance is expected to shrink with the rising of wage in China and the relocation of labor-intensive manufacturing from China to other low-wage labor abundant economies.

**Key Words:** US-China trade imbalances, comparative advantages, production sharing, flying-geese

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# Trump Economics and China-US trade imbalances

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## 1 Introduction

The trade deficit of the United States, as shown in Figure 1, expanded from around zero before mid-1970s to peak in 2006 at \$761 billion, which was around 5% of the US GDP. The trade deficit of goods was even larger, peaking at \$837 billion in 2006. Though this value decreased after the 2008 global financial crisis, it was still at a remarkably high level as \$752 billion in 2016<sup>1</sup>. The trade imbalances between US and Japan and other industrialized economies contributed most to the rising US trade deficits before the 1980s, while in recent years the US runs deficits mainly against emerging Asian economies and oil-producing economies. President Trump argues that the US trade deficit was caused by unfavorable trade agreements against the US and pledges to eliminate them by bilateral renegotiation or unilateral actions.

The US-China trade imbalance has been a prime concern of President Trump ever since his election campaign in 2015. The official data provided by the US Census Bureau shows that China, the emerging major player in the process of globalization, has been running a trade surplus with the US since 1984. As shown in Figure 2, China's trade balance with the US increased from a trade surplus of \$0.06 billion in 1985 to a trade surplus of \$347.02 billion in 2016, which represented 44% of US trade deficit in that year. This large imbalance has caused considerable pressure on the US-China trade relations. One major concern is the impacts of imports from China on US domestic employment. One highly cited work by Autor et al. (2013) shows that the exposure to imports from China had negative impacts on US's manufacturing employment. President Trump pledged in his election campaign to impose 45% border tax on imports from China as a measure to reduce the US-China trade imbalances and to retain jobs in the US.

Would imposing draconian tariffs on imports from China help reduce US total trade deficit? Would the reduction of US trade deficit with China bring manufacturing jobs back to the US? The answer to these questions depends on what cause the persistent trade imbalances.

The causes of rising US trade deficit have been discussed intensively. Existing literature provides theoretical and empirical support for several key factors, such as the lack of investment opportunities in emerging economies, undervalued exchange rates against the US dollar to the

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<sup>1</sup>This value is lower if we use the data as described in Feenstra et al. (2005) which only considers trade flows reported by the importers whenever they are available.

Figure 1: US balance of payment (1965-2016)

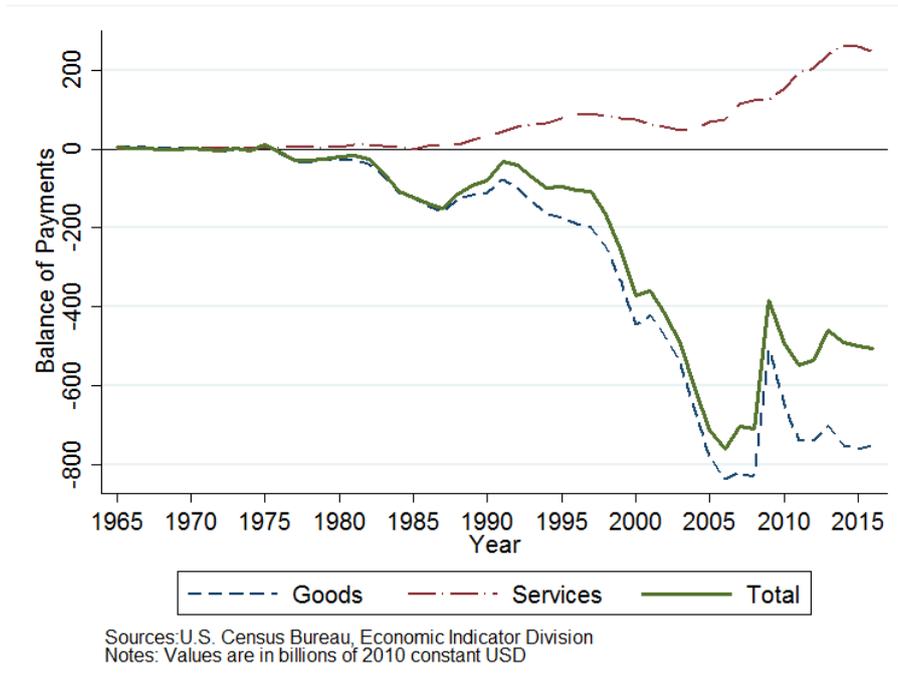
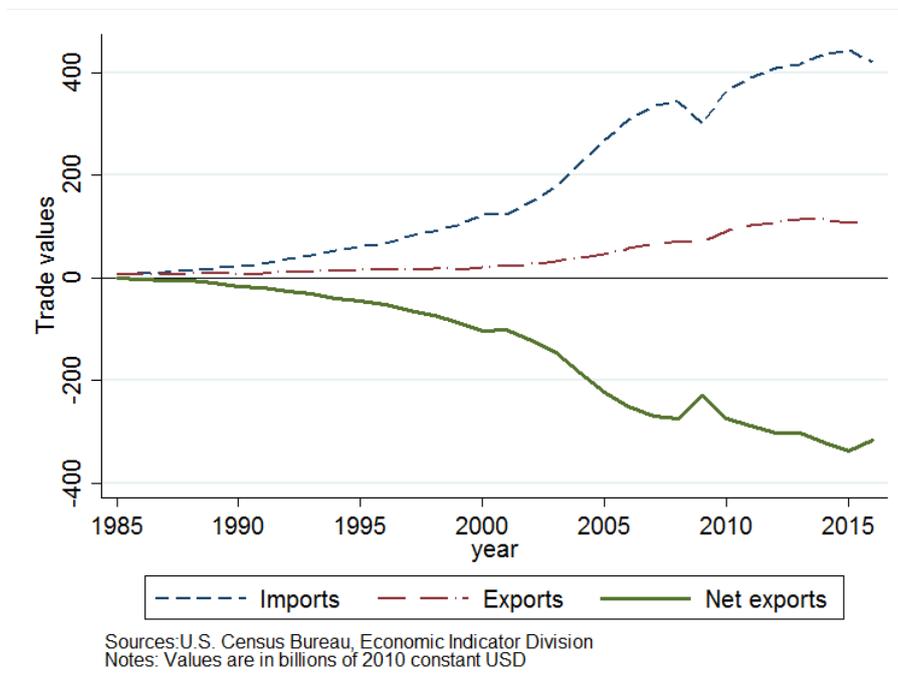


Figure 2: US-China bilateral trade (1985-2016)



currencies of several emerging economies, the increase in the price of the primary commodities and the over-consumption caused by financial deregulation and supported by US dollar as a major global reserve currency<sup>2</sup>.

This paper focuses specifically on trade imbalances between the US and China and investigates how China's comparative advantage in the labor-intensive manufacturing activities, combined with the global production sharing across economies with China as the assembly hub, works as the major source of the increasing bilateral trade imbalances between US and China. In particular, this paper first analyzes the bilateral trade patterns between US and its main trading partners and finds that East Asia is traditionally the main source of US's trade deficits. The paper further finds a declining share of US-East Asia trade imbalances in US total trade deficit during the period when the US-China trade imbalances was rising. It also reveals negative correlation between US trade deficit with China and China with some other East Asian economies. Based on these findings, our paper attributes the sharp increase in US-China trade imbalances to the reallocation of labor-intensive production activities from Japan and NIEs (Hong Kong, Singapore, South Korea, and Taiwan, China) to China, epitomized by the US's dramatic expansion of overall trade deficit.

The US-China trade imbalances were also exacerbated by the production sharing across borders in East Asia with China as the assembly hub. A growing strand of literature considers the value-added contents as an indicator for international production fragmentation and a more objective assessment of the relative distribution of economic benefits from trade between two trading partner economies (Hummels et al., 2001; Daudin et al., 2011; Johnson and Noguera, 2012). The idea of value-added contents of trade is based on models of sequential multi-stage production with stages split across economies. With flows of final products and intermediates co-existing, production fragmentation across economies generates discrepancy between gross and value-added trade flows. Traditionally, the focus of public interest is on the bilateral trade balance. However, with trade flows of intermediates across economies, the value of gross exports might overestimate the domestic economic benefits of exports to the exporting country and ignores the indirect impacts from other economies. Therefore, in addition to the bilateral trade balance, this paper carefully discusses patterns of bilateral trade flows measured in value-added contents, with data in Johnson and Noguera (2012) and Johnson (2014).

Moreover, given that the difference in comparative advantages across economies is one of the main incentives of global production sharing, this paper examines the bilateral trade balances at the sector level. The results show that only in sectors that China has comparative advantages there is persistent bilateral trade imbalance between China and US. In addition, other economies that has low labor costs share the same trade pattern as that of China. We argue that the root of US trade deficit is not China's exchange rate policy and other trade manipulations as President Trump pledged. Therefore, raising trade barriers for China's imports to the US will not help mitigate the US total trade deficits.

This paper is organized as follows. In section 2, we review several explanations for US trade deficits. Sector 3 presents the current status of the total US-China trade imbalances, and we further examine its domestic value-added contents in Section 4. In section 5 we conduct our analysis by sectors and apply the analysis to other economies. We also discuss the evolution of China's comparative advantages in the low-wage labor intensive sector. Section 6 concludes.

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<sup>2</sup>See Fracasso (2007) for a review of literature.

## 2 Main Explanations in Existing Literature

The causes of US trade deficits have been extensively discussed. In this section, we will review several main strands of existing literature. The first strand of literature considers the trade imbalances as the results of economic distortions rather than an “equilibrium” phenomenon. Therefore, the trade imbalances could only be resolved with policy adjustments. For example, a series papers by Obstfeld and Rogoff (2000, 2004, 2006) discuss the changes in exchange rate that are required to reduce the imbalances.

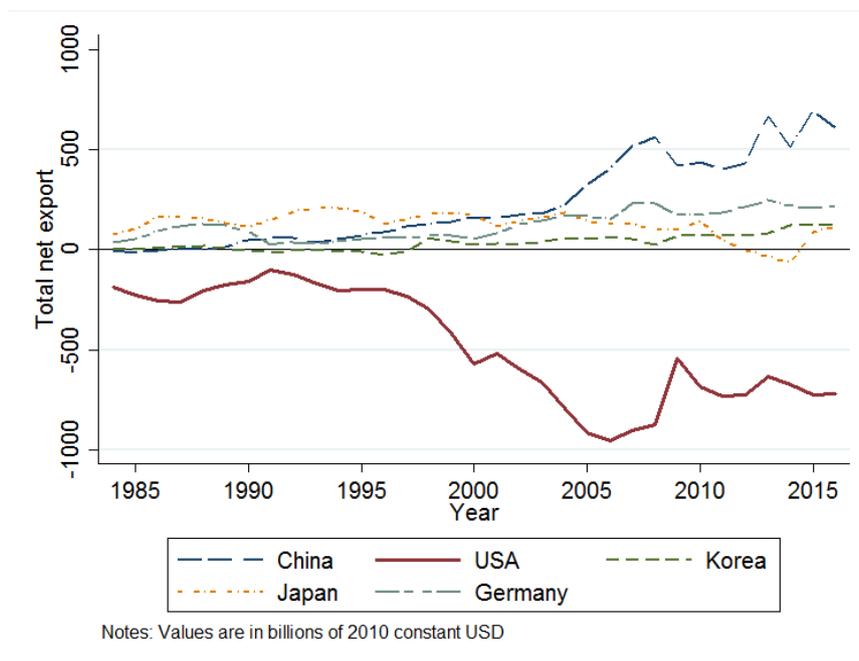
The second strand of literature considering global imbalances are an “equilibrium” condition, marked with the hypothesis of a global “saving-glut” proposed by Bernanke (2005). Different explanations of the “saving glut” have been raised. Caballero et al. (2008), for example, develops a model with heterogeneity across economies in their ability to supply safe assets. Mendoza et al. (2009) also focuses on the different levels of financial development, but emphasizes heterogeneity in the demand of assets and their model predicts increased financial integration raises foreign demand for US assets. Fogli and Perri (2010) explore the impacts of time varying macro risk, while several papers consider demographic heterogeneity as one reason for the emergence of external imbalances, such as Henriksen (2005), Cooper (2008), and Du and Wei (2013).

Other explanations for global imbalances include the anticipation of a rising U.S. future share in world output (Engels and Rogers, 2006), trade channels (Ju et al., 2012; Jin, 2012), productivity growth in the non-traded sector (Cova et al., 2005), measurement error (Hausmann and Sturzenegger, 2006), the asset price boom of the late nineties (Laibson and Mollerstrom, 2010), etc.

In other study, Lin (2013) has reviewed the above explanations and argued that the deterioration of US trade deficits after the mid-1970s is caused primarily by the US household’s overconsumption as a result of the wealth effect from rising asset value due to financial deregulation and the expansionary monetary policy, which in turn were made possible by the delink of US dollar to gold in 1971. Moreover, the only reason for the US to be able to sustain such a large and rising trade deficits for several decades is the status of US dollar as a major global reserve currency.

In this paper we focus particularly on the US-China trade imbalances. Unlike the cases in which economic reasons are employed to explain US trade deficit with Japan and the oil exporting economies, China and other East Asian economies have been blamed, by some researchers and politicians, to manipulate the exchange rate to promote net exports and use this as the main components of export-led growth development strategy. In this paper, we will show that the US traditionally has a trade deficit with the East Asian economies due to the differences in comparative advantages between the US and East Asian economies, and the rising bilateral trade imbalances between the US and China is a result of reallocation of production from Asia’s NIEs to China due to the evolution of comparative advantages over time. The US has trade imbalance with East Asian economies traditionally. While China’s trade imbalance with US increased sharply after the 1990s, the share of US’s trade imbalance with East Asian economies as a group declined in the same period. The facts suggest that the US’s worsening of trade deficits in general and trade imbalance with China in specific are most likely to be a result of US’s own internal reasons.

Figure 3: Overall trade imbalances (1984-2016)



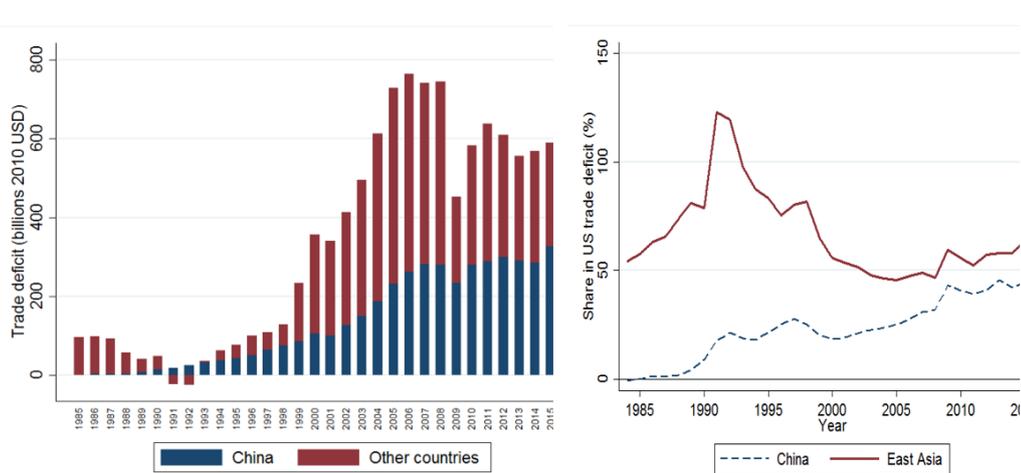
### 3 Current status of US-China trade imbalance

Since the official estimates of the same bilateral trade deficit often differs across trading partners, we only employ the trade values reported by importers as described in Feenstra et al. (2005) for the following analysis<sup>3</sup>. Figure 3 and Figure 4 present the main reasons that make China almost the sole concern among all economies with trade surplus with US. First, there has been continuous dramatic increases in the trade surplus of China for more than three decades while the trade imbalances of the main trading partners of US were much more stable since 1985 (as shown in Figure 3). Japan's trade surplus, for example, was \$103 billion in 1985 and \$130 billion in 2007. This increase was much lower than the case of China, from -\$16 billion in 1984 to \$608 billion in 2016. In addition, US's trade deficit with China accounts for the major part of its total trade deficit in recent years (Panel A in Figure 4). In 2016, 44% of US total trade deficit was with China, while this value was only 0.3% in 1985.

However, these facts provide little evidence to support the idea that imposing high trade barriers for imports from China could help reduce US total trade deficit. A closer examination of the contribution of East Asian economies to US trade deficit reveals more evidence. There are two main messages from Panel B in Figure 4. First, as argued in Lin et al. (2010) US began to accumulate trade deficit long before the start of China's trade surplus. US has had large trade deficit with East Asian as a whole before the rising of China's exports since the 1990s. The pattern of East Asian's contribution to US trade deficit has been relatively stable during the past three decades, except for the peak in the 90s. Moreover, although the contribution of China to US trade deficit increases dramatically since 1990, the total share of

<sup>3</sup>Our analysis in this paper is based on three data sets. All trade flows, unless otherwise specified, are from The Center for International Data (constructed by Robert Feenstra). Details of data construction are presented in Feenstra et al. (2005). The value-added contents of trade if from the online appendix of Johnson and Noguera (2012) and Johnson (2014).

Figure 4: US trade deficit with China and other economies (1995-2016)



Panel A US trade deficit

Panel B Share of trade deficit

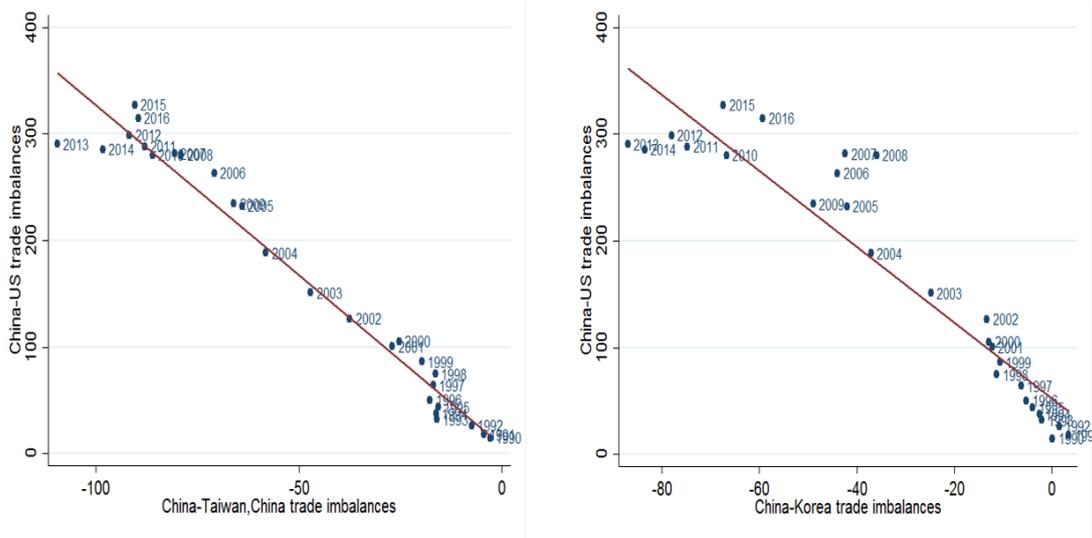
trade surplus of East Asian economies<sup>4</sup> in US total trade deficit declined from over 100% in early 1990s and 83.3% in 1995 to 63.1% in 2016. It implicates that the policies in China and East Asian economies were not the main reason for the US trade deficits and the increase in US-China trade deficit is associated with the reallocation of production activities across East Asian economies.

The international reallocation of production activities, mainly labor-intensive activities, has been discussed in the literature under the term of “fly-geese”. The flying-geese theory (Akamatsu, 1962), as discussed in Kojima (2000) and its empirical work, mainly examine the sequential economic development in all “high-performing Asian economies” (HPEAs), which “trickled down from Japan, to the NIEs, and then to ASEAN-4 (Thailand, Malaysia, Indonesia, and the Philippines), and China” (Cutler et al. 2003). Japan was the first country that experienced a dramatic structural transformation with expansion in its labor-intensive manufacturing sector and exports to the US after WWII. While its wage increased in the latter half of the 1960s, the labor-intensive manufacturing shifted to South Korea, Singapore, Hong Kong, and Taiwan, China. These production activities migrated again to the ASEAN-4 and China in 1980s, with 1990s as the peak time of FDI inflows to China (Lin, 2012, 2013; Chandra et al., 2013).

Inspired by the literature on the flying-geese-style economic development, we further examine the correlation among changes in the bilateral trade flows across economies. If our argument of production reallocation holds, increases in China’s trade surplus with US should be accompanied by increases in China’s trade deficit (or decreases in trade surplus) with South Korea and Taiwan, China after 1980s. Figure 5 provides strong evidence for this. Each point in Figure 5 stands for the value of bilateral trade imbalances each year in 1985-2016. The fitted lines in two graphs in Figure 5 are both downward sloping, indicating a negative correlation between China’s trade imbalance with US and China’s trade imbalances with South Korea,

<sup>4</sup>Here we only consider several big US trading partners, including China, Japan, South Korea, Malaysia, Philippines, Thailand, Singapore, Hong Kong, and Taiwan.

Figure 5: China’s trade imbalance with US, Taiwan, China and South Korea



as well as the one between China-US trade imbalances and China-Taiwan, China trade imbalances. In addition, China started to hold trade deficit with both South Korea and Taiwan, China after around 1990. This is also the start of the dramatic increase of China’s trade surplus with US. The timing pattern fits well with empirical evidence in the fly-geese style economic development literature.

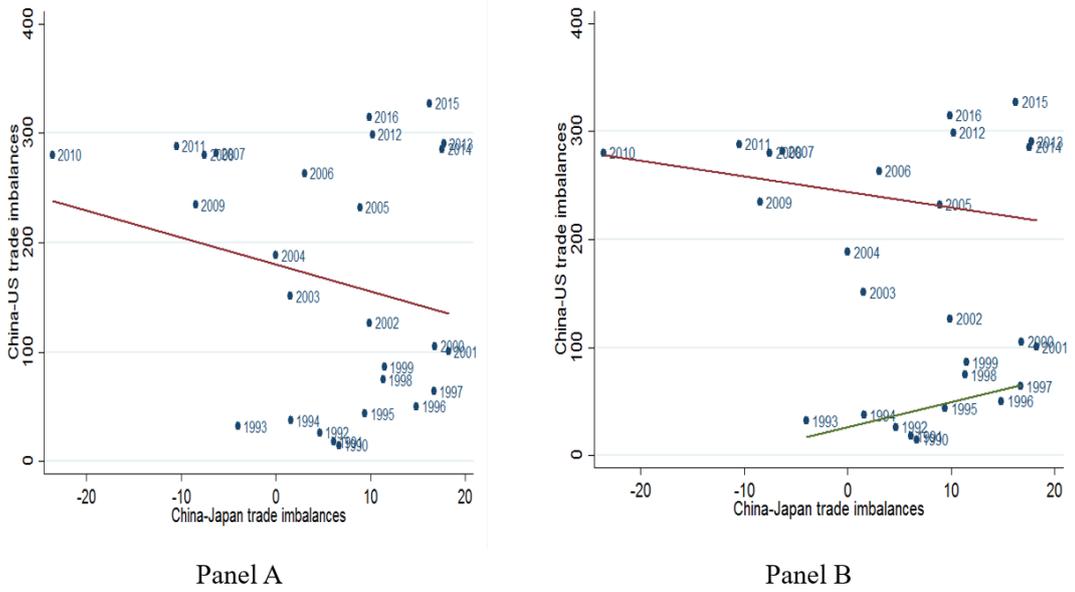
Since Japan finished its structural change and production reallocation before 1980, Figure 6 does not show a clear pattern between the China-Japan trade imbalances and China-US trade deficit. However, this graph is still consistent with the fly-geese story since the China-Japan trade growth in favor of Japan until 1990. In addition, if we divided the time of our concern into two periods, we see that before 2000, there existed a positive correlation between China’s net trade with Japan and with US, while this pattern was reversed after 2001 (shown in Panel B of Figure 6).

Actually the “triangular production sharing within Asia” has been discussed in several papers. Johnson and Noguera (2012), for instance, finds that the adjustments of trade balances in Australia, Japan, Singapore, South Korea, and Taiwan, China nearly add up to the changes in the US-China deficit. The production fragmentation and sharing implies the possibility that large part of China’s exports to the US were intermediates that China imported from these economies.

#### 4 Value added content of US-China trade imbalance

To find further support for production fragmentation, we next check the value-added share of exports in each economy as an indicator of the intensity of production sharing in the production network, as discussed by Johnson and Noguera (2012). When there exists production fragmentation, firms locate their production affiliation according to the comparative advantage in each country over the world. It helps firms reduce costs and gain more profits. In this case, what matters for the impacts of trade on employment is the value-added contents in trade flows rather than the total trade values.

Figure 6: China's trade imbalance with US and Japan

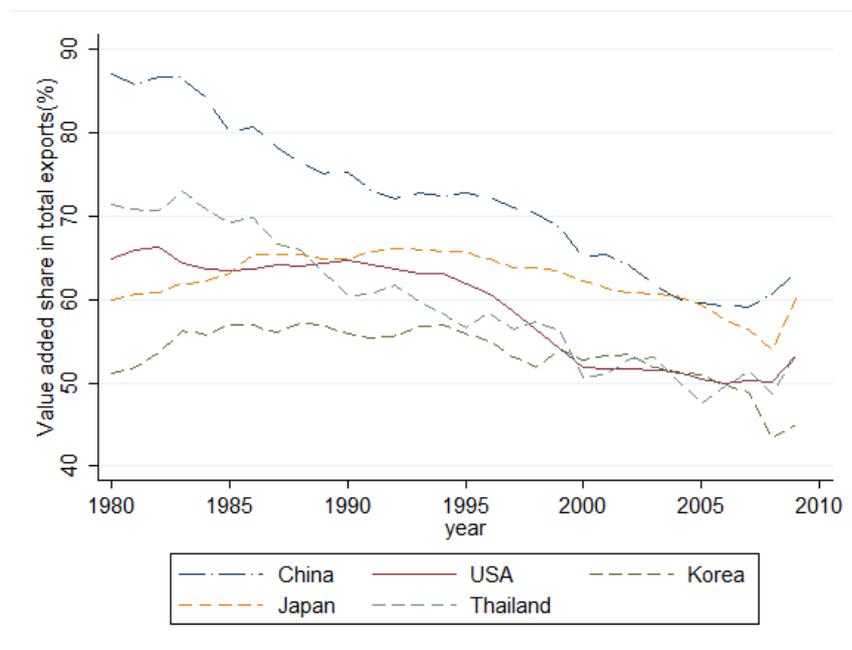


Value-added is defined as the difference between the value of output and the total value of purchased intermediate inputs. It includes compensation for labor and capital and indirect taxes. China is often engaged in the final stage of production by assembling intermediate parts before products are exported to final consumers. Consequently, the total domestic value-added content of China's exports is relatively low. In contrast, the value-added content of U.S. exports to China is high, which implies that the imbalances in the gross value of trade flows between the U.S. and China have been overstated the actual trade imbalances that might have asymmetric impacts on economic results of two trading partners. In addition, China imports large quantity of intermediate goods from South Korea and Taiwan. However, with simple processing in China, these products are exported to US and other economies. The calculation of overall trade flows counts their whole value into China's exports with US rather than South Korea and Taiwan, China's exports. Therefore, it underestimates the impacts of other economies on US imbalance. In this section, we check the value-added contents of trade based on the value-added datasets provided by Johnson and Noguera (2012) and Johnson (2014)<sup>5</sup>.

Figure 7 shows a clear decreasing trend in the share of domestic value added in total exports for all economies. The decline in China's value-added share is most dramatic, from around 87% in 1980 to 63% in 2009, indicating that the imported intermediates to China keeps increasing and China has been better integrated into the production network over the world. It was mainly driven by the liberalization of international trade and foreign direct investment. As an emerging economy similar as China and one of the main recipient economies of manufacturing production activities from NIEs, Thailand has experience a sharp decrease in domestic value-added share as well, from 71% to 45%. The share is relatively stable in developed economies, such as the US, Japan, and South Korea. US's value-added share in total exports has decreased

<sup>5</sup>Compared with the datasets used in Johnson and Noguera (2012), the online dataset provided by Johnson (2014) provides data for Taiwan, which is an important part of the fly-geese story. It also provides data at a more detailed sector classification, which gives us the information for further cross-section comparison.

Figure 7: Value-added share in exports (1980-2010)



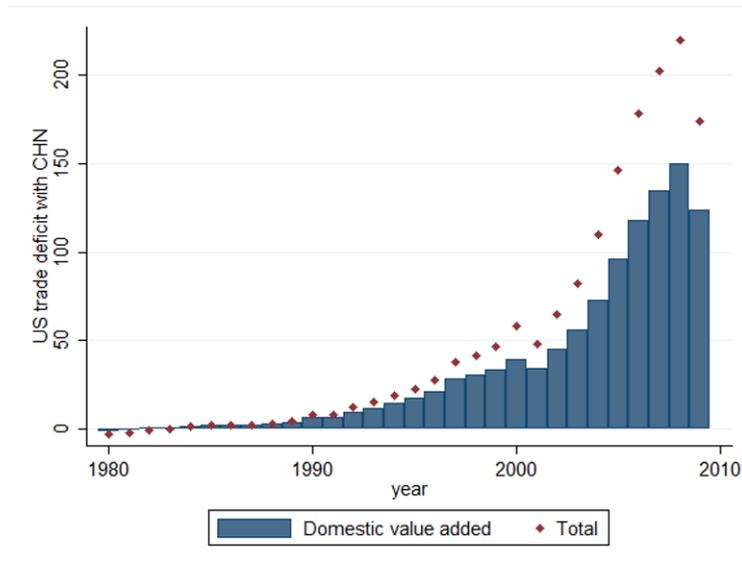
from 65% in 1980 to around 53% in 2009. Note that the value of value-added share in almost all economies increased around 2008, due to the great trade collapse caused by the global financial crisis. This, to some extent, provides evidence to support that value-added share is a good indicator for production sharing.

With regards to the bilateral trade flows, the most significant change appears in the value of trade imbalances between US and China. This is because the share of domestic contents containing in China’s exports to US is much lower than the share of other economies’ exports. This value would be even smaller if we adjust the results for processing trade (Wang et al, 2013; Wang et al. 2017; Johnson and Noguera, 2012). In addition, Panel A in Figure 8 shows that the gap between value added content of trade balances and total US-China trade balances is rising in China. However, as illustrated in Panel B, this share is quite stable for Japan and South Korea, with slight increase. South Korea’s trade surplus with US is almost the same with the two measurements, with a few exceptions in which the domestic value-added value higher than the overall trade imbalances. It implicates that the production activities differ across economies.

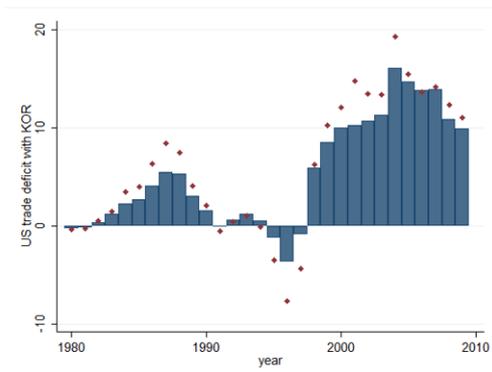
Changes in value-added contents of trade imbalances provides us an analytical tool to investigate more directly the reallocation of production across economies. Instead of examining the correlation between China’s overall trade imbalances with US and with other economies as in Figure 5, Figure 9 presents the relationship between the China-South Korea (or Taiwan) trade imbalances with China-US trade imbalances, both measured in the domestic value added. The negative correlation in both panels is even strong than the ones measured in overall trade values in Figure 5. It indicates that when the value-added contents of China’s net export to US increases, China raises its import of value added from South Korea.

Figure 10 presents the other side of the story, the pattern of production reallocation across US trading patterns. It shows very clearly that in the total US trade deficit measured in the

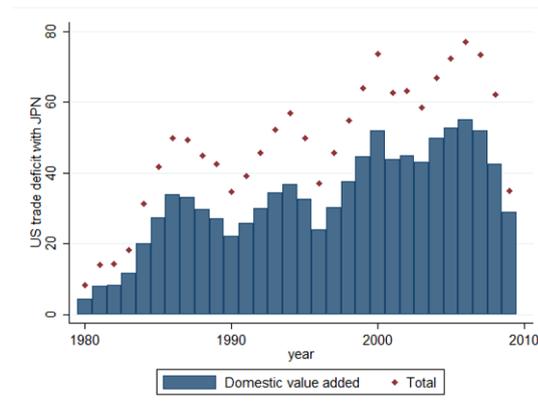
Figure 8: Bilateral trade deficit of US with other economies (1980-2011)



Panel A US trade deficit with China



Panel B US trade deficit with South Korea



Panel C US trade deficit with Japan

Figure 9: China's trade imbalance with US, Taiwan, China and South Korea

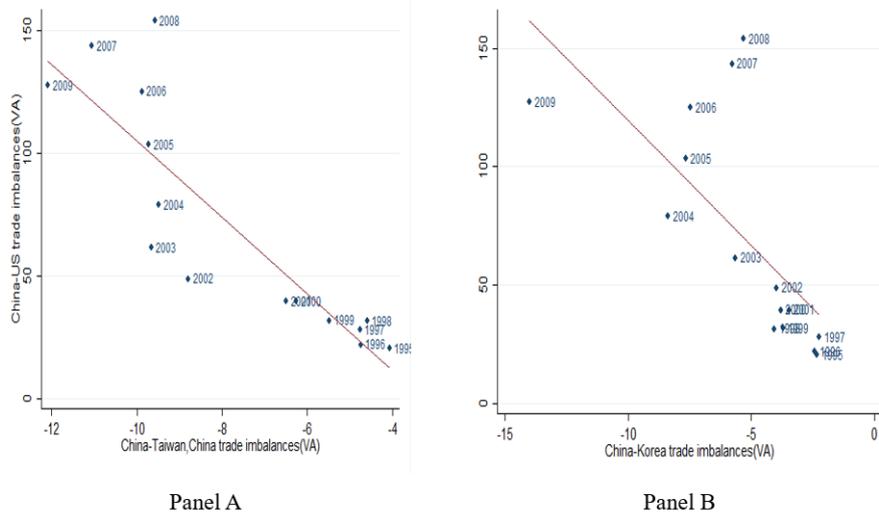
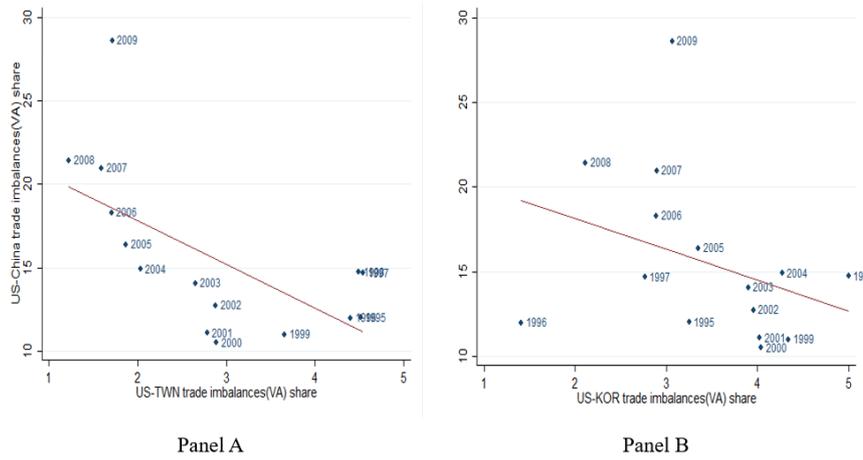
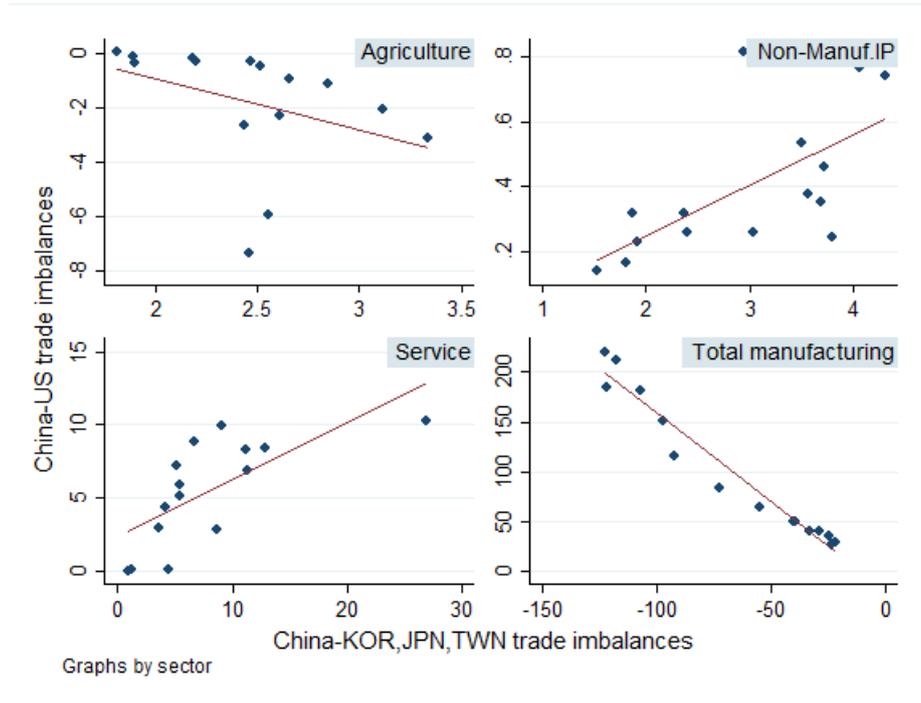


Figure 10: Value-added in US trade imbalances with China, Japan and South Korea



value-added contents, an increase in the contribution of China is associated with a reduction in the share of South Korea and Taiwan, which provides direct evidence for the production relocation among these economies. If we delete the observation of year 2009, which is an outlier due to the global crisis, the pattern is more significant. In addition, the share of value added contents in US trade deficit with China decreased before 2004, while the share increased in the case for Taiwan and South Korea, as a result of China's deeper integration into the global supply chain. Since around 2004, the share increased between US and China, which might be explained by China moving up along the global value chain.

Figure 11: Value-added in US trade imbalances with China, Japan and South Korea



## 5 Further discussion

### 5.1 Bilateral Trade Flows by Sectors

The main incentive for firms to split its production process is to seek lower cost around the world. Therefore, if the fragmentation of production contributes to the increase of bilateral trade imbalances between US and China, one should expect the conclusions in our previous discussion only hold for sectors that China has comparative advantages. Therefore, next we consider the correlation between China-US bilateral trade imbalances and the trade imbalances between China and South Korea, Japan and Taiwan, China as a group by sectors. Figure 11 provides evidence consistent with our expectation. China's trade deficit with East Asian economies and trade surplus with US only coexist in the manufacturing sector, which is where China's comparative advantage lies. In addition, the negative correlation between the two balances of bilateral trade only exists for the agriculture<sup>6</sup> and manufacturing sector, while the correlation is shown to be positive in the non-manufacturing industrial production<sup>7</sup> and service sector.

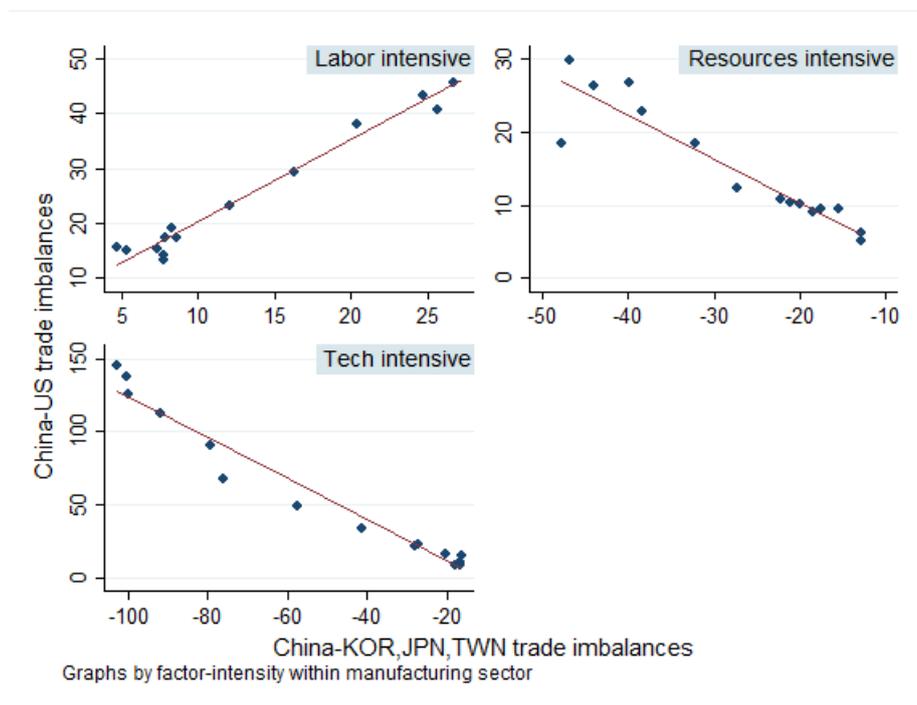
Figure 12 further examines industries within the manufacturing sector. We divide manufacturing industries into three groups based on their factor intensity<sup>8</sup>. The negative correlation

<sup>6</sup>The negative correlation in the agriculture sector is insignificant and is mainly driven by two points.

<sup>7</sup>This includes: Mining and Quarrying; Electricity, Gas and Water Supply; Construction.

<sup>8</sup>The labor-intensive sector includes: Food, Beverages and Tobacco; Textiles and Textile Products; Leather, Leather and Footwear. The technology-intensive sector includes: Machinery, Nec; Electrical and Optical Equipment; Transport Equipment; Manufacturing, Nec; Recycling.

Figure 12: China's trade imbalance with US, Japan, South Korea and Taiwan, China (by industries)



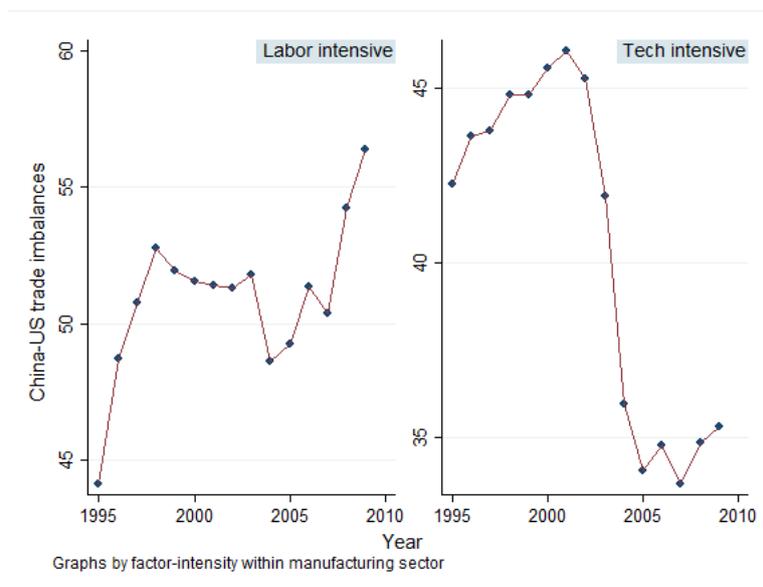
we discussed above is shown in the resources-intensive<sup>9</sup> sector and the technology-intensive<sup>10</sup> sector. These are also the two group of industries that China hold trade surplus with US but trade deficit with East Asian economies. Although China is not a skilled labor abundant country and does not have comparative advantage in the production of high-tech goods, the negative pattern in the technology-intensive sector is not inconsistent with previous conclusion. It is because industries in this category, such as the production of electrical and optical equipment, are exactly the industries in which South Korea and Taiwan, China transplant the labor-intensive part of production process to China. Therefore, an increase in China's export to US in these industries is associated with more imports of intermediates from South Korea and Taiwan, China, thus increasing its trade deficit with these economies. The production process of labor intensive goods, however, is completely located within China. As a result, China holds trade surplus with both US and East Asian economies, and value of surplus increases over time for both sides. With comparison across figures in Figure 11 and Figure 12, we conclude that the pattern shown in the overall balances of trade between China and US was mainly driven by trade flows in the technology intensive manufacturing sector.

To support the argument that China mainly involves labor-intensive production process, we further investigate the share of value added in the tech-intensive industries and labor-intensive industries. As shown in Figure 13, the domestic value-added share of China's exports to US in the labor-intensive sectors was raised from less than 45% in 1995 to more than 55% in 2009,

<sup>9</sup>he resources-intensive sector includes: Wood and Products of Wood and Cork; Pulp, Paper, Paper, Printing and Publishing; Coke, Refined Petroleum and Nuclear Fuel; Chemicals and Chemical Products; Rubber and Plastics; Other Non-Metallic Mineral; Basic Metals and Fabricated Metal.

<sup>10</sup>The technology-intensive sector includes: Machinery, Nec; Electrical and Optical Equipment; Transport Equipment; Manufacturing, Nec; Recycling.

Figure 13: Domestic value-added share of exports



while this value in the technology-intensive industries decreased sharply after China's accession to WTO in 2001. The domestic value-added share was around 35% in 2009, which provides support of "fly-geese" story that firms in South Korea and Taiwan, China mainly moved their labor-intensive production activities, such as processing, to China.

## 5.2 Bilateral Trade Flows of Other Economies

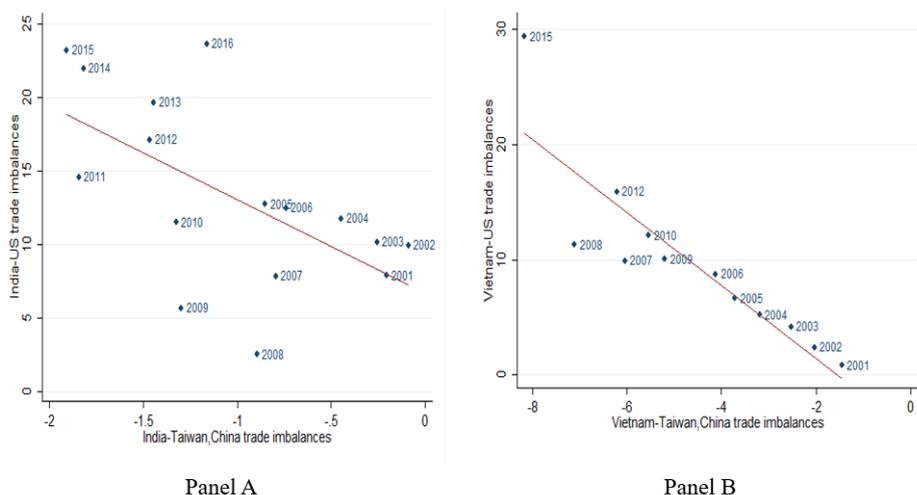
As one of the many recipient economies of reallocated production activities from NIEs, China is not a special case in any sense. The above analysis holds for other low-wage economies in China's neighborhood as well, such as Vietnam and India. Figure 14 and the two panels in Figure 15 illustrate this idea. The negative correlation discussed above is shown in the case of both India and Vietnam, and only exist in tech-intensive manufacturing industries. Therefore, as long as US still trades with other emerging economies with low wage, closing its deficit with China by imposing high import tariff would cause outmigration of labor-intensive manufacturing to other low-wage emerging economies and help little to bring employment back to the goods-producing sectors in US.

## 5.3 Changes in Patterns of China's Comparative Advantages

The main driving force of the fly-geese story and continuous reallocation of production activities across Asian economies is the variation of wages in this area. Cheap labor has played an important role in attracting the labor-intensive production process of the technology-intensive products to China and contribute to the increase in China's trade surplus with US. However, China's wage is now increasing, which will result in a loss of comparative advantages in the labor-intensive production activities. According to Li et al. (2012), real annual wages of Chinese urban workers in 1978 was 1,004 US dollars<sup>11</sup>, while this value has increased to 5,487

<sup>11</sup>Values are converted from yuan to U.S. dollars using the current exchange rate, and to the 2010 level using the U.S. GDP deflator.

Figure 14: Bilateral trade imbalance between India, Vietnam and other economies



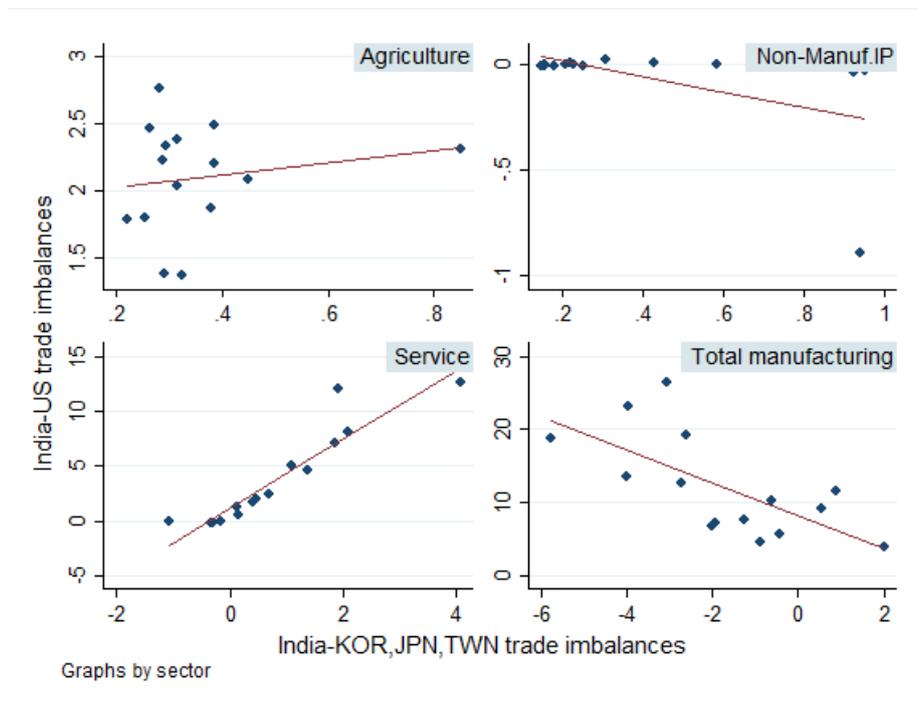
US dollars in 2010. The fast wage growth started around 1998, with an annual growth rate at 13.8% during 1998-2010 (Li et al., 2012). This value was even higher after the publication of Li et al. (2012) as shown in Figure 16. In 2015, China’s average annual manufacturing wage was about 9,165 measured in 2010 USD. It’s more than double of the wage rate in Thailand, and more than triple of the wage in all other economies shown in Figure 16. Although China’s labor productivity is estimated to grow at an annual rate of 11.3% during 1997-2010 (Li et al., 2012), China’s labor is still more expensive than these economies. The minimum wage in China also keeps increasing over the past decades, catching up with Philippines at a high speed as shown in Figure 17. It implies that the labor markets regulations are experiencing dramatic changes, which might also impact the locations choice of multinational firms.

There are many factors that may explain China’s rising wage, such as the rapid growth and accumulation of capital, the labor market reforms, privatization of state-owned enterprises, spillover from multinational firms, shortage of unskilled labor, and the economic structural change. As a consequence of the dramatic increase of China’s manufacturing wage, the production process, which was transplanted to China during the 1990s from NIEs has being reallocated to other economies with wages much lower than China, such as Vietnam, Cambodia, Bangladesh, India, Indonesia and even as far as Africa (Lin 2012; Lin et al. 2013). Their average wage was still below 2,000 USD in 2016. As shown in Figure 18, the FDI inflows to China dropped from 243.70 billion (measured in 2010 USD) in 2010 to 154.91 billion USD in 2016, while the outward FDI from China expanded from 57.95 billion to 197.28 billion. Meanwhile, the FDI inflows to Vietnam increased from 0.8 billion to 11.44 billion.

There are two messages we can conclude from the discussion in this section. First, the pattern of China-US trade imbalances was mainly driven by the trade in sectors in which China has comparative advantages, mainly labor-intensive consumption-related manufacturing goods. Therefore, imposing border tariffs on imports from China will hurt US consumers. They will have to pay higher prices for goods either produced domestically or imported from other less competitive, labor-abundant countries. Second, even without imposing an extraordinary import tariff, there will be a reduction in China’s exports to the US due to the reallocation of manufacturing production activities to other low-wage economies as a result of the increasing

Figure 15: India's trade imbalance with US, Taiwan, Japan and South Korea (by industries)

(a) Trade imbalances by sectors



(b) Trade imbalances by industries categories

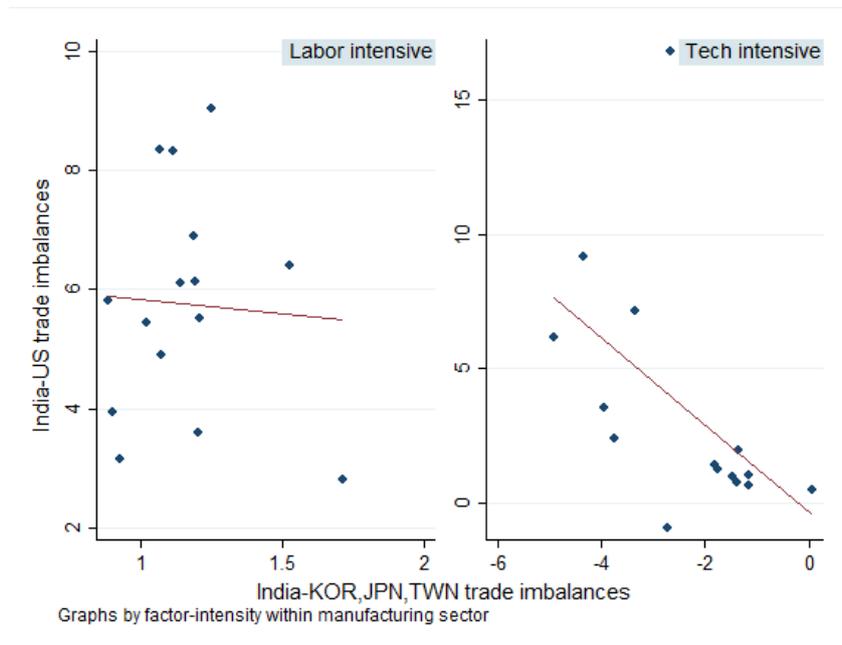


Figure 16: Annual wage in the manufacturing sector in Emerging Asian Economies

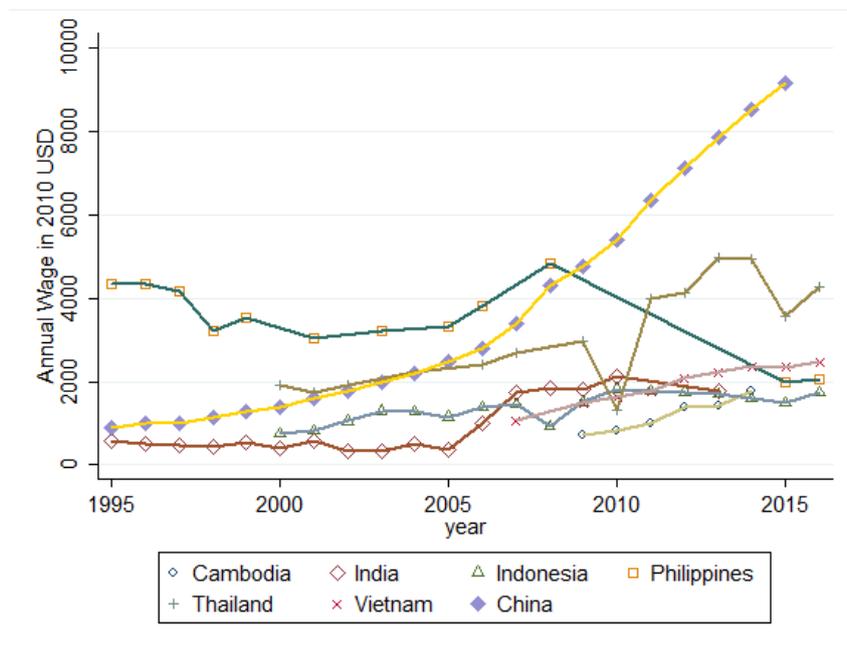


Figure 17: Minimum wage in Emerging Asian Economies

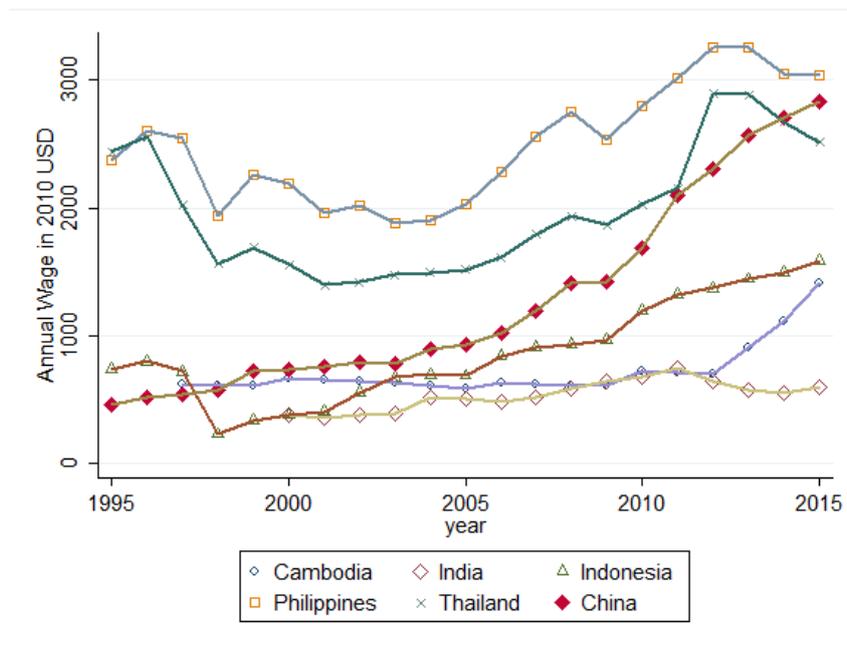
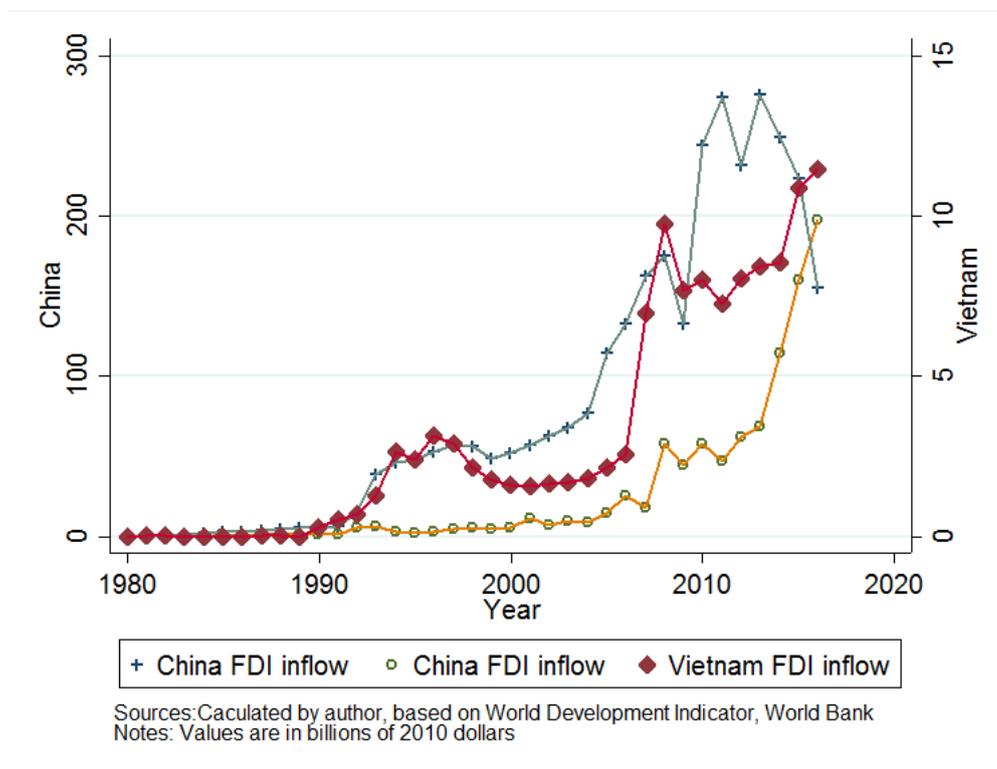


Figure 18: FDI flows to China and Vietnam (1980-2016)



wages in China.

## 6 Conclusion

In this paper, we provide empirical evidences to show: 1) the East Asian economies are traditionally the major source of US's trade deficits and provider of labor-intensive manufacturing, consumer goods to the US due to the differences in comparative advantages between US and East Asian economies; 2) The relocation of labor-intensive manufacturing from other East Asian economies to China in a flying-geese pattern due to changing comparative advantages and the global production sharing contribute to the meteoric rise of China-US trade imbalances in the last three decades; 3) Even though the weight of China's contribution to US's trade deficit increased sharply after the 1990s, the contribution of East Asian economies as a group to US trade deficit in fact declined in the same period. Therefore, China and East Asian economies cannot be the main cause for the worsening of US trade imbalances after the 1970s; and 4) the China-US trade imbalance is expected to shrink with the rising of wage in China and the relocation of labor-intensive manufacturing from China to other low-wage labor abundant economies.

From the above facts and analysis, President Trump's pledge of China as the reason for US's trade deficit is incorrect and his proposal to impose draconian tariffs on China's imports to the US will make little contribution to reduce US's overall trade imbalances and increasing US jobs. Such a measure may fasten the relocation of some manufacturing activities from China to other low-income economies and mitigate the US-China trade imbalance but not US's total

trade deficit. The US consumers will suffer if President Trump's proposed tariff measure was implemented because they will have to pay higher prices for the imported manufacturing goods from either China or other economies.

### References

1. Akamatsu, Kaname. 1962. "A Historical Pattern of Economic Growth in Developing Countries." *The Developing Economies*, 1(s1), 3-25.
2. Autor, David; David Dorn and Gordon H Hanson. 2013. "The China Syndrome: Local Labor Market Effects of Import Competition in the Us." *American Economic Review*, 103(6), 2121-68.
3. Bernanke, Ben. 2005. "The Global Saving Glut and the Us Current Account Deficit," Board of Governors of the Federal Reserve System (US).
4. Caballero, Ricardo J; Emmanuel Farhi and Pierre-Olivier Gourinchas. 2008. "An Equilibrium Model of" Global Imbalances" and Low Interest Rates." *The American Economic Review*, 98(1), 358.
5. Chandra, Vandana; Justin Yifu Lin and Yan Wang. 2013. "Leading Dragon Phenomenon: New Opportunities for Catch-up in Low-Income Countries." *Asian Development Review*.
6. Cooper, Richard N. 2008. "Global Imbalances: Globalization, Demography, and Sustainability." *The Journal of Economic Perspectives*, 22(3), 93-112.
7. Cova, Pietro; Massimiliano Pisani and Alessandro Rebucci. 2009. "Global Imbalances: The Role of Emerging Asia." *Review of International Economics*, 17(4), 716-33.
8. Cutler, Harvey; David J Berri and Terutomo Ozawa. 2003. "Market Recycling in Labor-Intensive Goods, Flying-Geese Style: An Empirical Analysis of East Asian Exports to the Us." *Journal of Asian Economics*, 14(1), 35-50.
9. Du, Qingyuan and Shang-Jin Wei. 2010. "A Sexually Unbalanced Model of Current Account Imbalances," National Bureau of Economic Research.
10. Engel, Charles and John H Rogers. 2006. "The Us Current Account Deficit and the Expected Share of World Output." *Journal of monetary Economics*, 53(5), 1063-93.
11. Fracasso, Andrea. 2007. *Taking Stock: Global Imbalances. Where Do We Stand and Where Are We Aiming To?* Università degli studi di Trento.
12. Hausmann, Ricardo and Federico Sturzenegger. 2005. "Us and Global Imbalances: Can Dark Matter Prevent a Big Bang?" Center for International Development, Harvard University, Working Paper, (124).
13. Henriksen, Espen. 2002. "A Demographic Explanation of Us and Japanese Current Account Behavior." Unpublished manuscript, Carnegie Mellon University, 1-30.

14. Jin, Keyu. 2012. "Industrial Structure and Capital Flows." *The American Economic Review*, 102(5), 2111-46.
15. Johnson, Robert C. 2014. "Five Facts About Value-Added Exports and Implications for Macroeconomics and Trade Research." *The Journal of Economic Perspectives*, 28(2), 119-42.
16. Johnson, Robert C and Guillermo Noguera. 2012. "Accounting for Intermediates: Production Sharing and Trade in Value Added." *Journal of International Economics*, 86(2), 224-36.
17. Ju, Jiandong; Kang Shi and Shang-Jin Wei. 2014. "On the Connections between Intra-Temporal and Intertemporal Trades." *Journal of International Economics*, 92, S36-S51.
18. Kojima, Kiyoshi. 2000. "The "Flying Geese" Model of Asian Economic Development: Origin, Theoretical Extensions, and Regional Policy Implications." *Journal of Asian Economics*, 11(4), 375-401.
19. Li, Hongbin; Lei Li; Binzhen Wu and Yanyan Xiong. 2012. "The End of Cheap Chinese Labor." *Journal of Economic Perspectives*, 26(4), 57-74.
20. Lin, Justin Yifu. 2013. *Against the Consensus: Reflections on the Great Recession*. Cambridge University Press.
21. \_\_\_\_\_. 2012. "From Flying Geese to Leading Dragons: New Opportunities and Strategies for Structural Transformation in Developing Countries." *Global Policy*, 3(4), 397-409.
22. Mendoza, Enrique G; Vincenzo Quadrini and Jose-Victor Rios-Rull. 2009. "Financial Integration, Financial Development, and Global Imbalances." *Journal of Political economy*, 117(3), 371-416.
23. Obstfeld, Maurice and Kenneth Rogoff. 2000. "Perspectives on Oecd Economic Integration: Implications for Us Current Account Adjustment." *Global Economic Integration: Opportunities and Challenges*, 168-209.
24. Obstfeld, Maurice and Kenneth S Rogoff. 2005. "Global Current Account Imbalances and Exchange Rate Adjustments." *Brookings Papers on Economic Activity*, 2005(1), 67-146.
25. Rogoff, Kenneth. 2006. "Global Imbalances and Exchange Rate Adjustment." *Journal of Policy Modeling*, 28(6), 695-99.
26. Wang, Zhi; Shang-Jin Wei; Xinding Yu and Kunfu Zhu. 2017. "Measures of Participation in Global Value Chains and Global Business Cycles," *National Bureau of Economic Research*.
27. Wang, Zhi; Shang-Jin Wei and Kunfu Zhu. 2013. "Quantifying International Production Sharing at the Bilateral and Sector Levels," *National Bureau of Economic Research*.